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ABSTRACT

Research on improving teacher practice is examined, focusing on the collaboration of researchers and practitioners in developing effective change strategies. Three studies are introduced that provide long-range data and form a knowledge base: (1) the Rand Corporation study of federal programs supporting educational change (1978); (2) the I/D/E/A study of change in individual schools (1974); and (3) the Concerns Based Adoption Model (CBAM) on implementation of innovations (1979). Other studies on the definition of teacher change and the use of the process-product approach are reviewed, followed by a discussion of the use of developmental models in designing teacher change efforts. Studies on the impetus for change and problems and questions associated with interevention in teacher practice are also included. In the conclusion, a weighted matrix design using findings from developmental models and a process-product orientation is cited as a promising change strategy. It is suggested that a collaborative study be developed that would allow researchers and practitioners to identify a generalizable system to change teacher practice and to use research studies in widely varying contexts. (FG)

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CHANGING TEACHER PRACTICE

A Synthesis of Relevant Research

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Research in Teacher Education Division

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CHANGING TEACHER PRACTICE

Increasing interest in and efforts at changing teacher practice suggest the need for a clearly stated justification; a firmly grounded knowledge base regarding methods, treatments, or interventions being used and/or advocated; and rigorous attention to intentions and results or effects. The complexity and uniqueness of the school setting, the process of mutual adaptation between any change effort and its object, and the present lack of predictability and control of effects of change efforts strongly indicate the need for researchers and practitioners to work jointly towards these ends. Yet, in changing teacher practice, as in other aspects of education, practice and research and theory seem to be separated by a considerable gap. Researchers note the resistance of teachers to research based external impetus to bring about change in their practice, and teachers view with disdain the varied, sometimes contradictory, conclusions of research studies which they perceive as unrelated to the real world of the classroom.

The president of the Association for Supervision and Curriculum Development (ASCD) points out two problems to consider in changing teacher practice (Day, 1981): 1) the apprehensiveness of teachers about the process of evaluation, their distrust of the accountability movement, and their fearfulness of becoming scapegoats for the failure of innovations about which they were unenthusiastic to begin with, and, 2) the low societal priority of intangibles like staff development.

The whole idea of staff development is based on the assumption that improvement can be promoted and directed, yet many workshops and programs of in-service training for teachers are conducted without evidence that they will produce better teaching. The use of research findings in informing

in-service training is based on the assumption that a dependable knowledge base will increase the likelihood of the training resulting in better teaching, yet some research findings are selectively emphasized while other are minimized in drawing conclusions upon which to base in-service training. For example, Good and Grouws (1981) note that while their three-year process-product study of fourth grade mathematics instruction allowed the identification of consistent behavior patterns for high-effective and less-effective teachers, many of the teachers in the study did not perform consistently. In terms of the criteria used (student scores on standardized achievement tests), one year these teachers were less effective and the next more effective and the researchers did not know the reasons for the fluctuations. An understanding of these fluctuations might produce a form of in-service approach different than a focus on only the identified consistent behavior patterns.

In the absence of a direct and consistent link between training and practice and student outcomes, staff development programs have become a conglomeration of activities determined by decision making criteria such as cost or availability or attractive packaging or strong advertising. And, these ad hoc staff development programs are likely to continue to be implemented in schools until effective, dependable systems of staff development become available and disseminated.

It is the intent of this paper in addressing the issue of changing teacher practice to promote the collaboration of researcher and practitioner in developing those effective systems for facilitating desirable changes and in putting those systems into practice. The issue is a cloudy one, with contradictory approaches, perspectives and conclusions, just as education is a cloudy issue, including, as it does, such disparate parts as instruction

and socialization, development and expansion and supervision and control. Neither research nor practice provide consensus; both present a panorama of possibilities. However, if the varying approaches, findings, and conclusions are viewed as a "blind man describing the elephant" phenomenon, it is not necessary to demand consensus nor to select and reject in the pursuit of consistency. Rather, the divergent approaches and differing conclusions can expand awareness of the complexities inherent in the process of changing teacher practice and serve as an impetus toward development of a more comprehensive conceptualization of that process.

So the diversity and contradictions will be included and the narrow view of changing teacher practice as simply the alteration of an overt behavior will be considered side by side with the more complex view of altering the entire conceptual framework within which the individual functions. By juxtaposing the various orientations and perceptions it may be possible to imagine a larger pattern (the silhouette of the elephant) which would allow each of the views to be "right" and useful in formulating an expanded and more inclusive research effort toward improving teacher practice.

Orientations

There are several assumptions regarding the issue of changing teacher practice on which there appears to be general agreement: 1) that change within the educational system is necessary, even inevitable (Harmon, Note 1); 2) that schools are complex social institutions in which change does not easily occur (Sarason, 1971); 3) that the function of schooling is to produce outcomes in students (Goodlad, 1972); 4) that teacher practice is directly related to student outcomes (Dunkin & Biddle, 1974); and, 5) that a desired

change in student outcomes can be facilitated by an appropriate change in teacher practice (Hall & Loucks, Note 2).

However, despite this common basis, there is a confusing diversity of beliefs and approaches regarding the issue. Koehler (Note 3), noting the difficulties of determining whether individuals formulate their research on the basis of their beliefs about teacher change, or develop their beliefs about teacher change from their research, expressed the opinion that these different perceptions of teacher change "will probably cause more conflict and tension among their advocates than have the various approaches to the study of teaching" (Koehler, Note 3, p. 1). There is a gap of some kind -- whether in practice, belief, perception, or all of these and more -- between advocates of changing teacher practice who focus on discrete and highly specific competencies such as how to teach children to turn their workbooks without fumbling (Gudridge, Note 4), and persons who, rejecting the "amazingly slow pace" of school instruction, teach twelve year olds in several five-hour days to design computer programs (Pierce, 1981).

There may be an even greater conflict between those whose intent is to use teacher practice to produce a social product -- creative leaders and docile workers -- and those whose intent is to use teacher practice as an impetus to social change (Freire, 1970, and Grace, 1978). And, certainly, there are differences, both in intent and in methodology, among change efforts informed by a behavio[illegible]odel versus a cognitive developmental model theory. The behaviorist might emphasize direct training in classroom management and specific skills on the assumption that if the teacher follows the correct procedure, the desired student outcome will result. The developmentalist might view facilitation of student development as the

reflecting different, sometimes theoretically contradictory orientations, but operationally responsive to the most immediate perceived need. As a result, researchers and change agents may perceive teachers as unresponsive to data-based change interventions and teachers may perceive researchers as isolated from reality.

A synthesis of the literature relating to changing teacher practice, if it is to relate to researchers and practitioners, must take into account the perspectives of both, discussing not only the findings of various studies but also the beliefs about changing teacher practice which inform the questions and methodology and mediate conclusions regarding the findings.

Knowledge Base

Three widely and frequently cited efforts provide extensive data regarding changing teacher practice: 1) the Rand Corporation study of federal programs supporting educational change (Berman & McLaughlin, 1978); 2) the I/D/E/A five year study of change in individual schools (Bentzen, 1974); and, 3) the Concerns Based Adoption Model (CBAM) work on the implementation of innovations (Hall & Loucks, Note 2).

The I/D/E/A Study

The findings of the five-year Study of Educational Change and School Improvement (SECSI) conducted by the Institute for Development of Educational Activities, Inc. (I/D/E/A) are the basis of significant intensive, clinical training for teachers and administrators. The central thesis of this study is that adults in schools must learn to help themselves. This means, according to Goodlad (1974), "that they must think together, plan together, decide together, and act together in dealing with problems inevitably

teacher's responsibility but not hold teachers accountable for predictable specific outcomes in students.

Obviously there are conflicting views as to how people "learn" and what knowledge is of greatest import. It is likely that different findings and certainly different conclusions would result from an approach which assumes that teacher practice is formed by elements or components which can be extracted intact for observation and/or manipulation, and an approach which assumes synergetic functioning, demanding holistic consideration of teacher practice in change efforts. For example, a process-product approach (Brophy & Evertson, Note 5) correlationally linking specific teaching behaviors to specific student outcomes provides a very different orientation to change efforts than an approach which regards the promotion of adult development in teachers (Oja, 1978) as a means toward facilitating developmental growth in students.

Faced with this diversity and complexity, researchers appear to respond by differentiation, specialization and consistency. That is, they select among the available frameworks and build on the work of others who have used a similar paradigm, seeking to expand the knowledge data base and support the theoretical structure of their chosen views. Procedure and rigor of specific studies are often questioned and conclusions are sometimes debated but the conceptual bases of the investigations are seldom challenged. Behaviorists cite behaviorists and are evaluated by behaviorists, developmentalists cite the work of other developmentalists and are evaluated by developmentalists, and so on. Seldom are divergent perspectives and/or approaches given serious consideration in forming an investigation. Practitioners -- teachers -- on the other hand, appear to resolve the problem of diversity overload through syncretism, reacting to pressure from various sources with behaviors

inherent in schools" (p. XIII). And they need help, support, and encouragement in doing so.

The intent of the SECSI project was to effect and to study change in the schools. Eighteen elementary and secondary schools were joined in a self help League of Cooperating Schools with SECSI staff serving as helpers, supporters and encouragers in an attempt to effect change. The study component revolved around understanding a school staff's receptivity to change.

The study identified a set of behaviors as the process by which all staffs consider change or reject it. This process of dialogue, decision making, action and evaluation (DDAE) reflected the school's openness to change. The study found that individually competent teachers put together in a school will not automatically be a group or staff that copes positively with changing demands on the school. Self-renewing schools were the product of a group enterprise. The basis of the SECSI intervention was the development of peer groups of schools. The basis of its study was the measurement of the DDAE process as an indication of the level of staff receptivity to change. The "level" of the process was determined by four characteristics: scope, importance, relevance, and flexibility.

The earliest findings of the study confirmed that teaching "tends to be lonely, often dull, work ringed about by fears of the unknown that might result from changes" (Bentzen, 1974, p. 195). The study also found that increased interaction among schools helped alleviate the loneliness, dullness and fear. Staffs within the League Network were more willing to try something new because peers encouraged rather than censured when a staff experienced failure.

Information from the study suggested that League schools came to hold certain expectations for the group and for themselves as League members. "League staffs were supposed to hold relatively non-traditional views about schooling; League staff were supposed to look critically at what they were doing" (Bentzen, 1974, p. 197). Though not all schools met them, the expectations were there.

The study also suggests the difficulty of changing the interventionists' perception of what they should and should not do. "School staffs have been treated by interventionists with condescension, pity, scorn, and despair, but rarely with dignity" (Bentzen, 1974, p. 201).

The SECSI study proposes peer group strategy as a means of effective change. The idea is that the intervention will build and maintain group expectations and that the school staffs will, in turn, pressure their individual members to change in the desired direction.

While the study certainly supports the value of this strategy it does not presume to generalize to all situations and it does not assert that peer group strategy is the only intervention strategy that should be used in schools.

The Rand Study

The four-year, two-phase Rand study provided survey data on 293 change-agent projects, and intensive case analysis of 29 projects (Berman & McLaughlin, 1978). The findings strongly suggest the importance of the role of the teacher in the change process and indicate the significance of site-to-project effects in the process of mutual adaptation of the school and the intervention.

The study analyzed the effects of specific federal policies on local change processes. The first phase focused on strategies and conditions promoting change in the schools; the second phase focused on factors influencing the sustaining of change.

Using findings from both phases, the study described the local process of change in regard to initiating and sustaining innovative projects. The study found that few school districts in the sample group actually conducted a rational search for better ways to educate students. Rather, the selection process was more a "complex interplay among organizational forces, political pressures, personal motivations, and educational concerns" (Berman & McLaughlin, 1978, p. 14).

The study found that each classroom, each school and each school system implemented a given innovation in different ways, and that in the process of the implementation both the innovation and the characteristics of the setting were changed. This process, termed mutual adaptation, resulted in a variety of adjustments to the project and in the acquisition of new attitudes and behaviors by the staff implementing the project, as the persons involved tried to make the project work for them in their own settings. Although the process of mutual adaptation did not assure the successful implementation of a project, it did increase the likelihood of that success. And, a crucial point to consider in changing teaching practice, the study found mutual adaptation to be the only implementation process leading to teacher change because the teachers changed only as they adapted the project's design to their own particular situation.

Study findings emphasize the fact that there is no single factor that guarantees successful education change. What happens with a change effort

depends on the interplay of the characteristics of both the change intervention and the setting to be hanged.

Classroom organization projects and projects designed to include community involvement appeared to have a direct effect on promoting change in teacher practice. The cost of the project did not appear to be a factor in eliciting teacher change. Data from the study indicate that teachers rise to challenges, responding more positively to ambitious and demanding innovations than to mundane or routine projects. However, a more ambitious scope of a project did not automatically assure success. Projects that were more comprehensive (including many schools and most grades) tended to be less likely to produce teacher change. Teachers with many years on the job were found to be less likely to change their own practice.

One factor, however, did show a strong, positive relationship to all of the project outcome measures: a teacher's belief that the teacher can be of help to all students. The study referred to this belief characteristic as a "sense of efficacy" which represented the teachers' attitudes about their own professional competence.

The Rand research indicates that local staff development activities could significantly improve teacher practice. But the study underscores the importance of mutual adaptation and the influence of factors and characteristics of the local setting. Packaged and rigid training programs are contraindicated, as is an unthinking, uncritical adherence to generalizations. Berman and McLaughlin point out that even some strategies which were clearly indicated by the study usually to be ineffective "due to their mismatch with the typical reality of school district life and with the dominant motivations and needs of teachers" (Berman & McLaughlin, 1978, p. 27) could be useful in atypical instances.

The Concerns-Based Adoption Model

The Concerns-Based Adoption Model (CBAM) provides a structure for staff development planning which focuses on the process of change as a personal experience (Hall & Loucks, 1978; Hall & Loucks, Note 2). The perceptions, feelings, motivations, frustrations, and satisfactions of teachers about an innovation are identified and classified according to a developmental scheme of stages. The process of change by which a person moves through these stages is attended to so that an innovation can be implemented. Concern-based staff development recognizes and accepts as legitimate the concerns of the persons involved in the change process. Change is regarded as long term and developmental, and individuals are perceived to need support as they experience change. In this model any process or product that the teacher has not previously encountered is regarded as an innovation for that teacher.

Seven stages of concern through which individuals pass with regard to any innovation have been identified. They range from the lowest, which means that there is little concern and little awareness, through a general awareness, to concern about the personal effects of the innovation, on to concern about the consequences of the innovation, then to a concern with the possibilities of collaboration in implementing the innovation, and finally to the highest stage where the concern is focused on an exploration of the more universal benefits that can be gained from the innovation. Appropriate interventions intended to change teacher practice attend the specific concerns of individual teachers at each stage.

Lieberman (1981) has summarized salient findings of these three projects regarding teacher practice: (1) from the Rand study -- that teachers are motivated by a sense of efficacy; 2) from the CBAM project -- that teachers

adapt to change developmentally; and, 3) from the I/D/E/A study -- that teachers want and need training in new ideas and techniques that are information-rich and that provide supports for trying out new techniques in their classrooms.

Definitions

Teacher change can have several meanings, each with different implications for in-service practice. Thus, in the Rand study (Berman & McLaughlin, 1978) and the Concerns-Based Adoption Model (Hall & Loucks, Note 2), where the focus is the institutionalization of a selected innovation, changing teacher practice seems to mean increasing behaviors which facilitate the successful implementation of the innovation. When the focus is a more generalized effort to increase teaching skills, changing teacher practice might mean increasing the teachers' repertoires of teaching models (Joyce & Weil, 1972). Another approach might attempt to change teacher practice through direct intervention to facilitate adult development (Oja, 1980), thereby increasing teacher capacity to perceive, evaluate, and select among alternatives. Others interpret change efforts as self-directed learning of adults and focus on the interaction of individuals with the environment. Knowles (1978) views the responsibility of the change agent as that of providing procedures and resources to facilitate this self-directed learning. Howsam and Houston (1972) advocate training teachers in predetermined competencies.

Practice-Outcome Relationships

In a mock trial sponsored by the National Institute of Education regarding minimum competency testing (Teacher Education Reports, 1981), both

pro and con teams agreed that it is unfair to hold teachers responsible for students who fail to learn simply because of lack of motivation. Soar and Soar (Note 6) note that what goes on in the classroom is not the most powerful influence on where a student stands in achievement at the end of the year. They cite references supporting the contention that in order to make reliable decisions about an individual teacher (in terms of student achievement) data from twenty classes would be required. They present impressive arguments against evaluating teachers by measuring the outcomes of their pupils. However, Miller (1981) suggests that in order to facilitate change, teachers need to accept personal responsibility for the current and past low basic skills achievement of their students. Borich (Note 7) describes this as the relative gain model which assumes that if a teacher is doing his or her job well, the teacher's pupils should exhibit more learning than those of a teacher who is not doing his or her job well, i.e., teacher competencies can be directly related to pupil competencies. A recent Australian study (Watts & McGaw, 1980) attests to the international scope of social pressure from employers regarding what they desire the schools to produce in terms of student outcomes. The list of desired personal qualities (positive, willing attitude, cleanliness, neatness, confidence, stability, respect for authority, punctuality, diligence, etc.), is similar to the personal qualities fostered by classroom management efforts (Worsham & Evertson, Note 8) to change teacher practice. The employers' expectations of the basic skills of literacy, numeracy and the ability to communicate also correspond to the major student outcome goals of the classroom management approach.

For the most part, change efforts that focus on management skills of the teacher (Worsham & Evertson, Note 8) appear to regard teaching and learning

as the "job" of covering a certain amount of material in a certain amount of time under certain conditions in order to produce the product of acceptable level of class average achievement on specified tests. This perspective provides the simplest, most direct context for researching and directing changing teacher practice. The desired change is greater efficiency on the part of the teacher, i.e., covering more material in less time, at less cost, resulting in improved product, higher class average scores on specified tests. Studies using this approach are generally confined to the basic skills of reading and math in the elementary grades and remedial or low level skill acquisition in older students, although this limitation is seldom emphasized in reporting the success of interventions based on this perspective in achieving "teacher effectiveness."

The process most commonly associated with this approach is to select an exemplar -- a teacher in whose classes the average basic skills achievement score on specific tests is relatively high. The next step is to observe and describe the overt classroom behavior of that exemplar and develop a training model based on the behavioral descriptions. Third is the attempt to get other teachers to adopt or imitate the desired behaviors. When the teacher is thus defined by role as an agent whose actions are assumed to directly affect student performance, the intent becomes to improve student performance by changing the behavior of the teacher. This perception underlies beliefs regarding ways of working with teachers, and includes the provision of activities intended to produce direct, relatively immediate, change in some specific overt behavior which is regarded as cause-effect related to a designated student outcome. Certain assumptions appear to inform this approach: 1) that the goal toward which the teacher behavior is directed is to have the class reach a particular level of skill and knowledge in a fixed

period of time, (2) that the evaluation of the effectiveness of the teacher is the average achievement level of the class on a specified task or scale, and, 3) that the purpose of changing teacher practice is to increase efficiency in attaining the goal, i.e., to raise the average score of the class.

This model is often referred to as process-product approach (Elliott, 1980). It is supportive of linear movement of students as groups through the school system and of the social expectation of some at least minimal level uniformity of outcomes in graduates of the system.

This configuration of a teacher and a group of students of approximately the same age is, according to Dunkin and Biddle (1974), surprisingly invariant across the United States. And, they contend, most pupils seem to learn to read and cipher under a teacher who is given the responsibility of "intriguing, cajoling, or threatening" them into knowledge. The process-product approach to changing teaching practice seems well suited to this classroom reality. Researchers using this approach attempt to correlate specific behaviors with certain desirable outcomes in student achievement. Those behaviors are identified with teacher effectiveness, a cause-effect relationship between teaching and learning is assumed, and from this rules for teacher training are formulated. Since this process-product model rests on the assumption that the correct treatment produces the desired effect, the teacher can be held responsible not only for exhibiting specified behaviors but also for the student achievement as the specific outcome related to the prescribed behavior.

Borich (Note 7) states that a requirement of the process-product model is that both the process behavior of the teacher and the performance behavior of pupils be measured, with pupil outcomes derived directly from teacher

behaviors which are derived from the goals and objectives of the training program. A large number of studies have contributed data to support this approach.

A study of fifty-three sixth grade teachers and a subsample of their students (Fox, Peck & Blattstein, Note 9) found systematic-organized classroom behavior by the teacher to be strongly related to student Time-on-Task, and standardized achievement to be affected in a curvilinear fashion by Time-on-Task.

Another study (Peck & Veldman, Note 10) of 165 second and third grade teachers found teacher characteristics which correlated highly with students standardized achievement test score gains to have consistent negative affective impact, suggesting the possibility that the "very values and procedures which tend to maximize the learning of the knowledge and skills tapped by standardized achievement tests may have adverse effects on pupil morale, interest, and long-term dedication to learning in a broad sense" (p. 9).

In the Rand Study teachers' verbal ability was found to have a positive correlation with improved student achievement (Bergman & McLaughlin, 1978).

Using a training model of pretest, inform, organize and guide practice, and posttest, Stallings (Note 11) found that teachers can and do change behavior when given specific feedback on their own behavior and a guided practice period.

Efforts at training teachers to be enthusiastic are underway and studies are being made to support the contention of a strong correlation between teacher enthusiasm and pupil achievement ("Enthusiasm", 1981). Certain actions were identified as part of enthusiastic behavior. These actions were

then taught to teachers on the assumption that it would increase their level of enthusiasm. Studies cited were inconclusive in their findings.

Ward and Cash (Note 12) in a process-product informed study, identified specific teaching practices and classroom variables related to increased student achievement for low and medium skilled urban youth. The method for changing teacher practice used in this study was to have teachers observe effective teaching, look at an expert's analysis of their own behavior in the classroom, and seek to bring their own practice into line with that of the effective teachers. Pre and post observations of twenty-five teachers who completed the training focused on changing teacher behavior. No appropriate student achievement data were available and no control group of teachers was observed in the setting. However, the study presents strong evidence suggesting that urban teachers can be trained to improve specific practices. In terms of changing teacher practice, they suggest that teachers "with the greatest difficulties" need conditions where they are encouraged to set more precise and demanding standards for their work and then given the support and technical assistance necessary to try out specific new behaviors.

Factors Affecting Change Efforts

In addition to studies focusing on the initiation of teacher change, there are those such as Johnson and Sloat's (1980) which investigate the maintenance of the change effect. This study of 13 teachers from a rural elementary setting found no measurable behavior change associated with six weeks of giving information or three weeks of instructions on practice but did find substantial changes in teacher practice in the desired direction associated with two weeks of guided practice and two weeks of coded practice. The salient finding, however, was that the rates of all behaviors of interest

had returned to their baseline levels at five and twelve month follow-up observations, suggesting that interventions judged to have succeeded on the basis of "end-of-treatment" data might be judged to have failed if follow-up observations were made.

Expanding the Rand Study finding regarding the association between teacher motivation and sense of efficacy, a psychological study (Weiner, 1980) found an association between the perceived cause of a need state and the affective reactions to that need. Anger and negative reactions appear to occur where the cause of the need is perceived as something that could be controlled, while pity and sympathy appear as responses when the cause of the need is perceived as outside the control of the person in need. This may provide a clue to differentiated teacher behaviors, often labeled "prejudice," toward students or groups of students.

Synthesizing findings of a five year research project involving eighteen schools, Goodlad (1975) suggests that successful change efforts are dependent upon an understanding of and impact on the interrelated whole that is the natural system of each school rather than focused on only some isolated component.

Berman and McLaughlin (1978) found that teachers often modify their classroom activities in idiosyncratic ways depending on what they have learned from a project, and that mutual adaptation was the only process leading to teacher change since teachers changed only as they worked to modify a project's design to suit the particular context in which they worked.

Discussing the Rand Study findings, McLaughlin and Marsh (1979) note that while skill-specific training can affect implementation of a project and

student outcomes, it does not affect long term project outcomes of teacher change and continuation.

Both the Rand Study and the CBAM research strongly indicate that changing teacher practice is a long term process which must focus on the individual.

The case study of a junior high school change project (Zigarmi, Goldstein, & Rutherford, Note 13) supported these findings. The study found that at the end of two years of intensive and continuous schoolwide implementation effort, 31% of the teachers were either not using the innovations or were having difficulty using it. Three observations were offered as explanations: 1) the focus was on group, not individual needs and concerns of teachers; 2) change may be aided but not forced, and the more complex the change the more time is needed for the process; and, 3) the teachers in this study were not told what behaviors were expected of them and teachers need to know what behaviors are expected in order for change to occur.

Lacefield and Mahan (1980), using a cognitive dissonance model, found attitude change in teachers to be a function of the level or intensity and duration of perceived dissonance. They found that in-service teachers move toward the underlying values or "philosophies" of their employing school, supporting the findings of other studies regarding the influence of context on the individual.

Miller and Wolf (1979) noted teacher change in terms of development from individual to organizational concerns and developed the cyclical Staff Development/School Change Model focusing on the interdependent relationship between school change and teacher change.

Czajkowski and Patterson (1980) present a schema or framework for change which they feel takes into consideration the idiosyncracies of a school culture. The cross matching model considers the state of the change (initiation, development, implementation), and the strategy (power, influence, reason) for implementing the change. Each of the factors can be matched with each of the other to derive an idiosyncratic profile for a specific school.

Developmental Model

When the teacher is viewed as an individual whose level of development both informs and constrains practice, the focus of change efforts is on movement to "higher"stages. An underlying assumption of this developmental model is that it is useless to merely provide teachers with ever increasing information and specific training in given models, skills, techniques, or competencies without concomitantly increasing their ability to effectively translate that information or skill into improved educational practice. From this view, the desired change is not so much the acquisition of additional skills and information, nor therapeutic treatment for diagnosed deficiencies, as the promotion of development which will, it is assumed, allow teachers to more effectively use acquired skills and knowledge to accommodate the needs of diverse student populations in a complex environment.

During the past two decades attention has turned to changing the ways teachers practice by facilitating their development as adult learners. Harvey, Hunt and Schroder (1961) presented a system for measuring the concept of cognitive complexity and presented the behavioral differences of persons functioning at different levels of development, the implication being that the higher level persons will be able to practice more effectively in the

classroom. Hunt and Sullivan (1974) provide support for change efforts with studies showing a level or stage of conceptual functioning not as a permanent personality characteristic but only a preferred mode of functioning at a given time, which can be altered. Knowles (1978) summarized and supported theories of adult learning that attend the unique characteristics of adults rather than extrapolating from studies of the child as a learner. He interprets change efforts from the perspective of what he calls the "assumptions of andragogy" which support change efforts through the interaction of individuals with the environment. Harvey (1966) found results consistent in indicating that the more abstract teachers in the study were more effective in producing desirable classroom atmosphere for their Head Start students.

Rouk (Note 14) points out that three separate studies of teacher effectiveness indicate "The problem for teachers is not so much a lack of good techniques, then, as it is knowing which ones are right for which students under what circumstances," (p. 10). Brophy (1979) concurs that teachers not only need to master particular skills but also need to know when to use them as there do not appear to be any universal teaching competencies that are appropriate in all teaching circumstances.

It appears from available research in the area of development that without intervention most adults stabilize at less than the optimal stages predicated on the various instruments designed to describe, define, or designate levels at which persons may be said to function. Advocates of the developmental model of changing teacher practice believe that it is possible to directly intervene to promote development toward more optimal stages.

Building on the findings and theories of developmentalists, Oja (1980) has developed and tested a program of staff development intended to directly

intervene in promoting in-service teachers' growth to higher levels of ego, conceptual and moral development. Oja and Sprinthall (1978) found significant differences on two of three dimensions of developmental growth (moral judgment reasoning and conceptual level) between a group of teachers who participated in the program during the summer and teachers taking typical summer school classes. Although the program did not assure consistent success in the classroom, there were indications that the teachers had broadened their perceptions of their students and increased their own self-analytic skills in reflecting on both success and failure.

Carew and Lightfoot (1979) present data which suggest a mediating power of internal mental processes such as understanding, beliefs and values on the behavior of teachers in the classroom and to the learning of their students. Studying only behavior is insufficient, they assert, because the same behavior can be governed by quite different motives, and conversely, radically different behavior can be governed by the same motives.

Impetus for Change

Sarason (1981) points out that underlying an attempt to introduce a change into the school setting is the assumption that the change is desirable according to some set of values.

The intent of the various approaches to changing teacher practice appears to be consistent: to increase teaching effectiveness. The impetus for change, however, has two very different bases: 1) a desire for something "more" or "better" -- a drive toward what could be; or 2) a need to correct, remediate, "straighten out" a problem -- a judgement and rejection of what is.

Cost-effectiveness, or simply cost, plays a major role in decision making regarding staff development and inservice training. It is not surprising that the emphasis on changing teacher practice has created a market for inexpensive, quick-fix, guaranteed methods, nor that the market is being attended. Even the Association for Supervision and Curriculum Development has published a colorful little sales catalogue, Media for Staff Development, in which fourteen "training packages" covering a variety of topics, are offered with the admonition, "why pay for high-priced consultants when you can hear the leading authorities ... by ordering a tape or film?" (Note 15, p. 1).

Because schools have diffuse, unclear goals, some of which would invite controversy if made explicit, the intents and motives for changing teacher practice are sometimes in operational conflict. Bidwell (1965) points out that it is a bureaucratic necessity that the individual teacher's practice be coordinated with others in such a way as to allow students to move through the school system as groups and end up as a fairly uniform minimal standard class. He suggests that the intrinsic nature of the teacher as teacher runs counter to this, so that the teacher is forced to violate his or her own rules of performance in order to perform adequately as an employee.

Problems and Questions

There are many problems associated with the concept of intervening to change teacher practice, and even more questions.

There is the problem of aggregate effects. For example, if teachers "change" developmentally through discrete stages of concerns and levels of use (Hall & Loucks, 1978) in relation to each innovation introduced, and if each teacher's rate of change is individual, then it is possible that the

introduction of numerous innovations simultaneously or even over a relatively long period will produce an overlapping overload with teachers functioning in many, maybe all, of the CBAM stages and levels, a different stage and level for each innovation, resulting in aggregate effects not predictable nor attributable to any specific innovation and not identified by the CBAM instruments.

A recent study by the Rand Corporation (Kimbrough & Hill, Note 16) may well have implications for research on changing teacher practice far beyond the scope and size of the project. The purpose of the study was to find out what was happening when federal and state requirements, each originating and being administered separately at levels above the local school, required simultaneous and integrated implementation at the school and class level. In contrast to multitudinous studies limited to the effects of specific innovations and interventions, this study investigated aggregate effects. Three of the findings seem particularly significant.

First, in some schools children are pulled out of class for categorical programs so frequently that the teacher has the total class for only 1½ hours daily, and is unable to implement the state mandated educational curriculum. Second, in several districts core and categorical programs used incompatible reading methods and instructional materials, forcing teachers to abandon their lesson plans in order to help federal program beneficiary children adjust to the differences in teaching methods. And third, administrative burdens were imposed on teachers to the extent that they were forced to neglect teaching responsibilities. In some districts, teachers spend so much time developing Individualized Educational Plans for students served by P.L. 94-192, or charting the progress of Title I or bilingual students, that they have to reduce time spent in actual instruction. These aggregate effects of

interruption or interference of one element with another in the teaching context, of requirements to simultaneously implement conflicting or clashing methods, materials, or programs, and of the expansion of duties and responsibilities beyond time constraints, are crucial to the practitioner but cannot be predicted nor detected through research investigation of an isolated component of teaching practice.

There is the problem of unanticipated effects of any specific change effort. Inservice training models aimed at getting teachers to exhibit certain specific behaviors, however valuable according to some set of values or criteria, may simultaneously condition them to look externally for "right" answers with which to handle uncertainty and decision-making, to "cook-book" class activity and interaction with students, or to regard the teacher's responsibility only as adherence to approved methods and materials. "Adult development" models, on the other hand, may "move" teachers into a stage where they reject externally imposed rules even when their own knowledge base is insufficient for generating and selecting among alternatives.

There is the problem of simplification and overgeneralization of research findings. For example, Glickman (1981) incorporates differing theoretical views into a practical model of staff development calling for individuality with social responsibility - "Developmental Supervision" - intended to guide change agents in assuring that teachers continue to "change and grow."

There is the problem of social context. Changing teacher practice is a part of the larger process of educational change and is impacted by the problems of the latter. A report for the Center for Educational Research and Innovation (Harmon, Note 1) presents three major problems in planning for educational change: the need to balance economic resources, the demands of

society, and the needs of the individual. Changing teacher practice appears to involve policy, district characteristics, student characteristics, building level influences, concern and change facilitating behaviors of the principal.

There is the problem of conflicting objectives. Bidwell (1965), describing the public school in its service function as an arm of the state, suggests that the "intrinsic nature of the teacher runs counter to the bureaucratic principle of school organization and that, paradoxically, to perform adequately in his office the teacher is forced to violate the rules of performance" (p. 979). Grace (1978) found the definition or criteria for identifying an effective teacher to be constituted simultaneously in the ideological and functional senses, i.e., according to some generalized concept of a "good" teacher and according to what needed to be done in the specific work situation. Teacher resolution of the conflict between the demands of the legitimized ideology and the work imperatives, apparently, he concluded, required the avoidance of critical reflection regarding their own activities, in spite of inservice change efforts which encourage such a critical stance.

There is the problem of resistance. When teachers are caught between the pushes and pulls of school efforts to operate within economic constraints, to meet changing societal demands, and to maintain philosophical commitments, they often develop a sort of patchwork functioning which combines several different forms of belief and practice. This allows them to respond to the fluctuating pressures but produces an uneasy equilibrium which militates against change efforts that focus only on one factor in the totality of the teaching context. They are reluctant to risk losing a behavior that at least "works," for one that is untried. The Rand Study

(Berman & McLaughlin, 1978) found that teachers with many years on the job were less likely to change their practices. Delahanty (1978) notes, that teachers fear risks that are often unaccompanied by convincing prospects of success, especially where failure is likely to be attributed to the teachers, and success, if it occurs, to the change intervention. Mann (1976) points out that introduction of the change effort is frequently an indictment of existing practice and of the practitioner. The reality of the risk involved in changing teacher practice is underscored by the fact that no class of educational treatments has been found that consistently leads to improved student outcomes when variations in the institutional setting and nonschool factors are taken into account (Berman & McLaughlin, 1978).

Another problem is that there is little attention paid to the concept of regressive change and its evolution in terms of the relationship between the teacher and the school. Lacefield and Mahan (1980) found that teachers change in the direction of the values of the employing school. Would a teacher placed in a narrow, rigid, repressive school become more narrow, rigid, and repressive? The Rand study (Berman & McLaughlin, 1978) found that teachers were unlikely to continue even successful project methods which they had assimilated without the approval of the principal. "To do so would not only be difficult in light of the sometimes subtle, sometimes blunt means that principals often employ to establish a uniform 'school style,' but also would appear contrary to professional self-interest" (p. 31).

Lack of clarity and differing if not conflicting orientations present another problem. Sarason (1971) points out that it is characteristic of the modal process of change in the school culture that the intended outcome is rarely stated clearly, and if it is stated clearly, by the end of the change process it has managed to get lost. Howsam and Houston (1972) view

competency-based education as the thrust necessary for adaptation to meet the challenge of a changed and changing society. Martin (1979) concludes that teachers need to be flexible - perhaps the single word most associated in research with effective teaching. Fullan and Pomfret (1977) conclude that effective implementation of educational changes which require role changes will not occur without longer time perspectives, more small-scale intensive projects, more resources, and time and mechanisms for contact among would-be implementers, yet commercially packaged programs promise cheap and fast assured change and some research studies seek to identify "change" over a two and three week time period.

Conclusions

There is much current questioning throughout the educational system regarding what is being done and its relationship to students' life goals and to societal needs (Mulhern, 1978), impacting on change effort intents. There is diversity in research findings. There are many questions regarding what can be done as well as what should be done through change efforts. Can teacher characteristics be modified? Can their development as adults be intentionally promoted along desired lines? Can teacher competency be enhanced and maintained through direct instruction in specific skills? What modifications of teacher practice are most conducive to increasing teacher effectiveness in meeting the needs of diverse student populations and in being responsive to the bureaucratic demands of the educational system? What strategies best facilitate this modification?

There is a need to integrate and expand. That teacher behavior affects what happens in the classroom has been adequately proven. Further efforts toward this end would produce results as useful as that presented in a

newspaper comic showing the pompous looking chairman at a cost of living council meeting announcing, "after a 2-year study, we've concluded that the cost of living is directly affected by prices." There now exists a strong diverse research-produced information base regarding changing teacher practice. The Rand Study, the I/D/E/A work, the Concerns-Based Adoption Model project, reinforced by many studies, and the work of the developmentalists and those researching process-product relationships between teacher practice and student outcomes, provide sufficient and significant data for generating a multitude of testable hypotheses. What appears to be happening, however, is that researchers select one area of focus, whether it be the implementation of an innovation, specific skill training, generalized adult development, or changes in the organizational structure of the system, and attempt to identify correlational and/or cause-effect relationships; while principals and teachers seek to juggle simultaneously all of the above and more in an inherently indivisible continuous experience. Perhaps it would now be worthwhile in guiding and improving educational practice to widen the perspective of changing teacher practice by juxtaposing findings from the various approaches and creating a more comprehensive conceptualization of the process of changing teacher practice.

This juxtaposition would allow for the construction of hypotheses which take into account aggregate effects within the reality of teaching practice -- outcomes, both negative and positive, that were not intended nor produced by any one of the separate factors within the situation, but which resulted from the synergetic combination of some or all of the perceived components, or the entropic dissipation resulting from lack of energy input. Specific questions such as "how to raise the average score" on specific tests might then be expanded to "at what cost to other outcomes and with what unintended

effects does this process produce gain in class average score" on specified tests?

The fact of mutual adaption and the lack of predictability and control over the nature and magnitude of effects suggest the need for researchers and practitioners to work jointly in discovering generalizations and constructing a framework for bringing about change. There is a need for a theory involving concepts that increase predictability and control of change efforts. Chin and Downey (1973) suggest, in fact, that the study of changing behavior deliberately is already emerging as a discipline in its own right with concepts of change informing efforts to induce change.

In practical terms what is needed is a successful way of improving teacher practice. Given the present state of knowledge and practice regarding change strategies, it appears that a promising approach to a study of the possibilities of altering teacher behavior is a weighted matrix design utilizing findings from models of adult development and process-product orientation. The inclusion of multiple factors facilitates generalization; weighting of factors permits situation-specific application. Change can be viewed from three perspectives: 1) acquisition, the increase of information and skills possessed by the teacher; 2) remediation, the redirection and improvement of behaviors evinced by the teacher, and, 3) development, the expansion and progression of the functioning capability of the teacher. Since change in teacher practice occurs within an institutional context, any successful program of change must attend to impinging organizational and/or bureaucratic factors. The matrix design would include these factors. Deliberate intervention in order to bring about change in teacher practice presupposes some end-in-view toward which the change effort is directed. Again, the matrix design would allow consideration of the various factors in

terms of the end-in-view. Such a weighted matrix could serve as a universal or normative system of change in which "exceptions" can be viewed as perturbations predicative of and leading to the identification of additional factors affecting change rather than being reported, as is often done, as unexplained anomalies.

By attending simultaneously to the multiple factors identified in different research approaches and to the conflicting nature of the demands upon teachers within the holistic process of teaching, it may be possible to develop a theoretical conceptual framework matrix within which researchers and practitioners can work jointly to facilitate clarification of the intent of efforts to change teacher practice, to increase the level of predictability of effects of specific change efforts, and to better direct and control the nature and magnitude of change in teacher practice.

A Suggestion

Given the ample data base from which to generate testable hypotheses, and the need for an effective generalizable system for changing teacher practice, an appropriate next step might well be the development of a study intended to identify a system by which personnel in any school setting could 1) increase their own conceptual clarity about their present situation and the intent of change efforts, 2) discover and/or construct appropriate alternatives for achieving desired changes, 3) continuously monitor and evaluate effects of interventions, and 4) modify the change efforts accordingly.

Such a study should be a collaborative effort between researchers and practitioners in which the researchers provide data from previous studies and the practitioners provide data from the setting of the study; in which

researchers provide conceptual structures and practitioners provide situation specific content for informing the change effort; in which both researchers and practitioners develop hypotheses, analyze findings, and draw conclusions; in which the researchers help the practitioners to make more explicit the intent of the change effort and the practitioners help the researchers to make more explicit the nature of the change process. This approach has similar properties to the Interactive Research and Development on teaching study (Tikunoff, Ward, and [illegible]n, 1979).

Using multiple, widely varying sites and incorporating data from the various approaches to the study of changing teacher practice should make possible the attending of both site specific variables and the processes that are generalizable across sites. Taking into account the context in which the teaching practice occurs, the characteristics of the individuals involved, and the process by which change is induced should facilitate the identification of a generalizable system for effecting change in teacher practice.

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